Infunde DEVELOPMENT

INFRACO ASIA
Project in **Philippines**

Philippines Smart Solar Network Project

Off-Grid Islands in The Philippines

The Philippines Smart Solar Network Project will provide affordable, 24/7 access to electricity to off-grid areas in the Philippines through the installation of AC and DC smart solar networks. The first phase of the project involves developing and installing a microgrid project of up to 100 households (0.02MW) in Palawan. Infunde will proceed with expansion to 8,000 households (1.2MW) in phase 2.

Context

The Philippines is made of up more than 7,000 islands, many of which lie in **hard-to-access regions where the provision of electricity via grid extension is not viable.** The project works in partnership with the local community to install, operate and maintain smart solar network systems that will generate and distribute electricity to households, small businesses and community centers in the Philippines' off-grid communities, many of which will be receiving first-time, affordable and reliable clean energy.

Project Highlight

35MWp	200M	Dec 2022
Pipeline of AC/DC system	US$ of total project cost	Expected COD

***Palawan,** Philippines*

Country and Sectoral Background

In the Philippines, **there are 2.5 million off-grid households** which are to be electrified by 2022 according to national electrification targets. More than 50% of these households are in 'unviable areas' or 'missionary area'.

According to Missionary Electrification Development Plan 2016-2020, **over 700,000 households** are known to be in these unviable areas and are currently unelectrified.

The **AC smart solar** network is composed of **solar PVs, diesel generator sets, and batteries** located on one site in several off-grid communities. Some AC systems will use smart prepaid meters to remotely monitor projects in far-flung areas while other AC sites will use regular post-paid meters for lower capex.

The **DC smart solar** network is composed **of smart grid controllers in combination with off-the-shelf solar and battery** components that will be installed in households in several off-grid villages.

Project Overview

Company:	Island Hybrid Power Corp. / Philippines Smart Solar Pte. Ltd.
Country:	Philippines
Location:	Provinces of Busuanga, Palawan, Quezon, Occidental Mindoro, Iloilo, and Zamboanga del Sur, Philippines
Sector:	Solar Power Energy (solar microgrid with battery and generator sets)
Status:	One DC project operational since August 2019, three AC projects are operational since March 2021
Timeline:	Financial Close by Q4 2021
Shareholder(s):	InfraCo Asia, AIEC-ILAW

Philippines Smart Solar Network Project

INFRACOASIA
Project in **Philippines**

Development Impact

Provide affordable electricity to households and small businesses in off-grid areas.

With the DC Smart Solar System, customers pay fewer. For the AC system, the first-year blended tariff will help these DC and AC rates to be lower compared to the rates from diesel generator sets.

Reduce fossil fuel used in diesel gensets by replace with solar energy.

Thereby reducing GHG emissions. Solar energy has no carbon emission.

20,000+ people improved access to energy in the expansion phase.

Based on 4,000 households of the installation and operations and maintenance of the first . The catalyst private sector investment into supply of renewable energy to remote communities.

Provide 400+ jobs for the installation and operations of the first .

Created 420 jobs during construction and 66 jobs during operations. Expected to create more than 400 short-term and long-term jobs in the expansion phase.

Environment and Community

San Isidro Busuanga DC Project

The Philippines Smart Solar Network Project will promote a sustainable and environment-friendly source of electricity that will reduce dependency on fossil fuels.

It will also provide social and economic development by providing 24/7 access to electricity to off-grid areas.

Infunde Development will ensure IFC Performance Standards are followed and that any social and/or environmental risks, predicted to be small, are well identified, avoided when possible, and otherwise minimized and mitigated.

Key Investment Strengths

Potential 35MW pipeline of AC and DC systems to be completed by May 2021. This pipeline of projects will provide improved access to electricity to around 200,000 households located in off-grid islands in the Philippines

Fully-operational AC and DC projects with total capacity of 135kW Solar PV and 132kW high-speed diesel. This will increase to around 1.2MW of constructed AC & DC systems covering 4,000 households by May 2021.

Partnership with local electric cooperatives with good credit standing will allow easier processing of permits and avoid competition from private sector

Power Market Overview

Demand: There are 2.5 million off-grid households in the Philippines which are to be electrified by 2022 according to national electrification targets.

More than 50% of these households are in 'unviable areas' or 'missionary areas' and there's no economically-feasible way to connect these households to the transmission system or main grid.

Demand drivers: Missionary Electrification Development Plan 2016-2020, over 700,000 households are known to be in these unviable areas and are currently un-electrified.

Supply chain: The project will create substantial revenues for local businesses, which include construction companies and other local manufacturers/fabricators/suppliers by getting their products and services for the development of the project.

Unviable and Unenergized Households

Luzon
400,000
households

Visayas
200,000
households

Mindanao
350,000
households

Infunde DEVELOPMENT | **Philippines Smart Solar Network Project**

INFRACOASIA
Project in **Philippines**

Projects Information

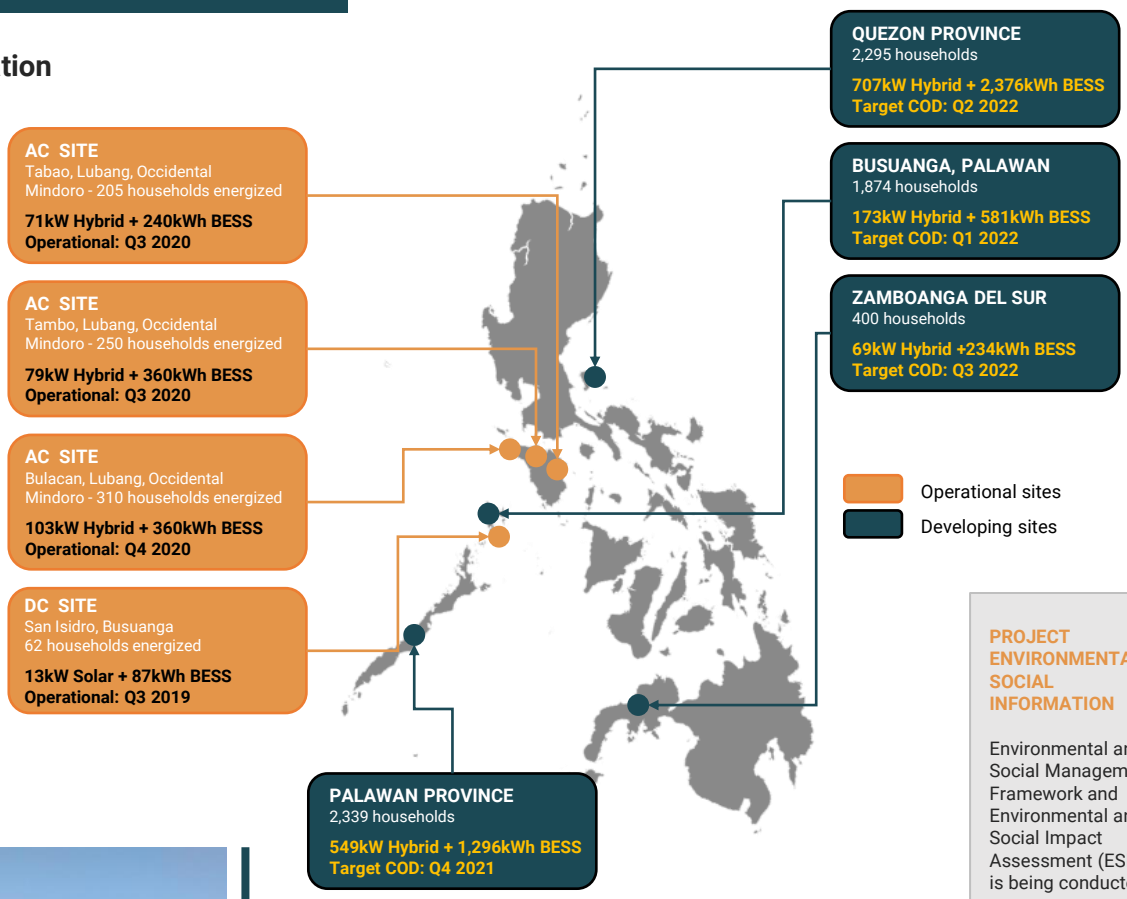
Geographic Location

AC MICRO-GRID

The AC micro-grid is composed of high-speed diesel generator sets with solar PV, lead acid batteries, inverters and Energy Management System (EMS).

DC SMART SOLAR NETWORK

The system of nano grids composed of solar PV and lead acid or lithium-ion batteries and offering low-power DC appliances.



PROJECT ENVIRONMENTAL & SOCIAL INFORMATION

Environmental and Social Management Framework and Environmental and Social Impact Assessment (ESIA) is being conducted

Project Scope

The first phase of the project involves developing and installing a DC microgrid roll-out in San Isidro, Busuanga, Palawan, that serves 62 households to assess technical and commercial viability and demonstrate proof of concept.

The second phase involves developing and installing of 3 AC sites under the franchise area of the Lubang Electric Cooperative in Lubang, Occidental Mindoro providing electricity to 765 households.

The third phase of the project involves the rollout to a remaining 3,173 households to complete the 4,000 households as well as developing a pipeline of additional sites catering to 196,000 households, which will engage the selection and integration of selected AC hybrid microgrid and DC Smart grid sites within the franchise area of the Electric Cooperatives.

Solar Resource

Source: ***Assessment of Solar Resources in the Philippines, NREL 2000***

Solar Radiation

The Philippines' average solar radiation ranges from 128-203 watts per square meter, or an average of 161.7 watts per square meter

Power Generation

From the solar radiation and sunlight duration, this translates to potential power generating capacity of 4.5-5.5 kWh per square meter per day.

Power Facility

The northern part of the country has enough sunlight to generate an average of 4.5-5 kWh per square meter per day, while areas in the south can produce an average of 5-5.5 kWh per square meter of solar power per day.

Infunde's Role

Infunde Development is leading overall project management, negotiations with strategic partners, installers, and financing activities. It will also help the local installers in development pricing negotiations, procurement and managing contracts with service providers.

INFRACOASIA

InfraCo Asia (IAD) is a commercially managed infrastructure development and investment company of the Private Infrastructure Development Group (PIDG) – an innovative infrastructure development and finance organisation delivering pioneering infrastructure in the poorest and most fragile countries.